



## Utilizing Pho's Move in Composing Scientific Paper within AIMRD

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### ABSTRACT

**Objective:** Composing and publishing a scientific article needs compound responsibilities, mainly when Indonesian students write it since English is their foreign language. Swales pioneered CARS with three moves, followed by Pho, who mentions moves and steps in a research article using AIMRD, which can be worthy of consideration in composing a scientific article. **Method:** The moves and steps of undergraduate students' research articles were analyzed qualitatively, using Pho's moves and steps as parameters. The data analyzed consists of nine articles on English Education, seven on Applied Linguistics, and six on Applied Literature. Tables of move-analysis were prepared as the research instrument with different codes for classifying and analyzing the articles. **Results:** Undergraduate students place and develop moves along with steps effectively, which was inflicted by the thought patterns and the tendency of undergraduate students. Thus, writing research articles developed by undergraduate students could be considered in revising institution guides for composing research articles and reflection in composing research articles for other disciplines. **Novelty:** Most research on sections of research articles applying a move-based approach have worked with first language studies published in journals and focused on a particular section of the research article, while this study using Pho's moves and steps works with EFL learners, which compose an unpublished complete text of the scientific article. The findings of current research mediate both students' critical thinking and unfathomable argumentation skills by the availability manifestation of the rhetorical move. The main contribution of this research result is meant to alleviate writers, mainly undergraduate students, in generating research articles successfully.

### INTRODUCTION

Ways to communicate writing in both second as well as considerable thinking and research have gone into foreign languages, resulting in methods, media, and material to teach writing courses. Investigation on writing was conducted to display the writer's disposition to hypothesize his/her interpretation based on a definite issue in written form (Almutwakkil & Alshakhi, 2022; Gomez-laich et al., 2019; Iordanou & Rapanta, 2021; Robillos & Bustos, 2023; Udu, 2021). Students who are beginning writers may find the investigation's findings helpful as they think about making explicit appearances in their RAs (Januarto & Hardjanto, 2020). It transpires since writing shows how the writer exposes topics, provides commitment and consistency, and indicates professional competence in discipline-approved practices. However, a well-written text is nothing when it does not signify a beneficial contribution to be implemented, including the hidden impact of RAs. Related to the hidden impact, Mendeley data can disclose some research publications' hidden effects, such as their instructional value for nonauthor users within academia or their influence on readers beyond academia in terms of practice (Paul-Hus et al., 2020; Shao et al., 2022). Scientific reasoning is one way to

comprise a well-written text since it is the active cognitive capacity to comprehend and assess scientific data (Suaidah et al., 2023). In addition, it is considered one of the solutions for dealing with the global economy in the twenty-first century (Bao et al., 2018).

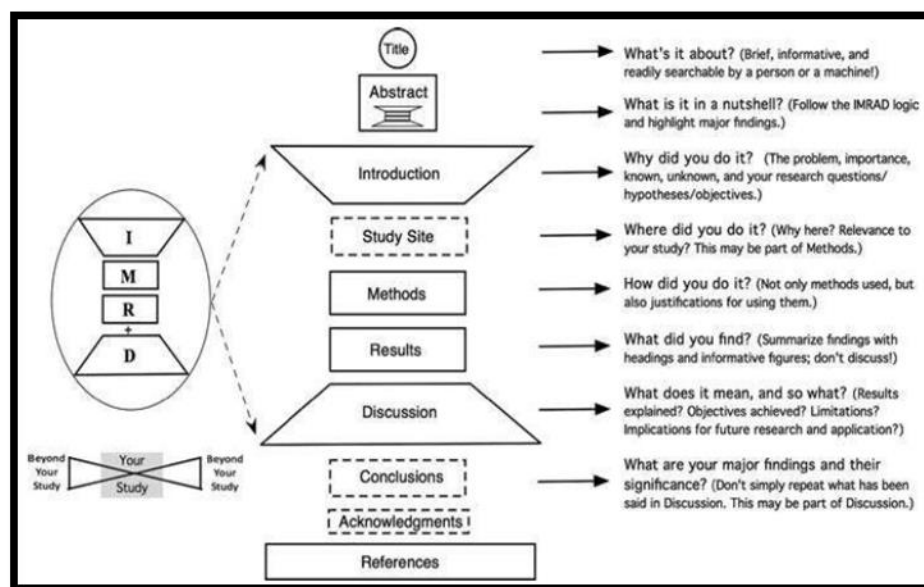
The spirit of creating and publishing scientific papers in peer-reviewed journals inspired our investigation. Most practitioners and scholars report their research articles (RAs) in academic journals. Reporting RAs through scientific publication in academic journals promotes propagation and scientific knowledge circulation (Lubis, 2020; Tanko, 2017). Expressing written ideas in a foreign language, especially for academic purposes such as RA, necessarily involves some elements, including genre. For L1 speakers, genre characteristics could be picked up automatically at home; however, for individuals with little or no exposure to L2, they need to be taught. Referring to the genre-based approach elevated students' writing significantly despite the consequences of their motivational state (Mauludin, 2020). The circumstance moves the attentiveness in genre investigation of an RA that they establish an essential network of intellectual messages.

Some scholars explored RAs. Amnuai (2019) differentiated the use of tenses and voices in the RA Abstract (RAA) in international corpus and Thai corpus by using Hyland's framework. There was also an influence of courses finishing later than expected on thesis submissions from students who do not need to improve (Thamrin et al., 2022). Virtual lectures caused the unsatisfactory competence of students' thesis writing during the pandemic era, and there were still conventional teaching methods and learning models being used (Alghamdi et al., 2021; Djidu et al., 2021; Gamage et al., 2020; Rahiem, 2020; Simamora et al., 2020; Yawisah et al., 2022; Yunus et al., 2021). Project-based hybrid learning was then implemented to improve students' scientific skills and equip theoretical concepts through real problems provided during the learning process, as recommended by Martin et al. (2021). A study on RA, particularly on keywords, can also be considered to train pupils' scientific abilities to recognize terms connected to RAs and having potential educational value (Gilmore & Millar, 2018).

Linguistic features are not merely among sections and diverge transversely moves. In addition, Pho's (2013) model investigates all five sections of a scientific article, in contrast to models by Swales, Bhatia, Santo, Hyland, Yang and Allison, as well as models by Biber et al. which focus on specific RA sections. Studies on sections of RA were also conducted in the field of education (Sari et al., 2023; Sidek et al., 2016). Sidek et al. (2016) have applied a move-based approach to first language studies, published on proceeding, and focused on RAA using Hyland's five moves. This study, using Pho's moves and steps, worked with EFL learners who composed unpublished complete text of the scientific article. While Sari et al. (2023) have worked with environmental education RAM for the sake of developing self-ability concerning being an environmental educator, this study worked with the whole sections of RA for the sake of lightening up students' critical thinking and incomprehensible argumentation abilities by the availability appearance of the rhetorical move.

Pho (2013) has investigated diverse moves from 40 RAs of 134 indiscriminately. She recognizes more complex steps in developing a move that assists comparable functions in different sections. The different section of RA takes account of the abstract, introduction, methodology, results, and discussion (see Figure 1). Abstract, as the initial section of RA, describes the topic of the study, its purpose, the technique used, its main

conclusions, and its main contribution (Hammond, 2023). In most reports, the first discussion comes after the abstract is the introduction. This could be a more detailed version of the abstract that explains the motivation behind the study's design and its environment. The writer may jump right into the topic of the study and its main area of contribution as they begin the introduction. Analysis of writing RAIs advances non-native English speakers' broad knowledge of cross-cultural studies in academic writing and the knowledge of non-native English beginner writers in particular (Farnia & Barati, 2017). Hammond (2023) mentions that discussions occur between the abstract, introduction, and conclusion. The following three discussions after the introduction are methods, results, and discussion. The information of complete text on RA is drawn using the keyword AIMRD, as seen in Figure 1.



**Figure 1.** The IMRD structure of the research paper (adapted from Wu, 2011).

The IMRD structure above shows that the abstract section begins RA, which displays the topic and highlights the findings. The organizational structure eases writers in exploring their research findings in the RAs. It helps writers in communicating the research contribution. The introduction starts the idea in general and then gradually narrows the focus, while it is on the contrary in the discussion. However, each journal publisher has its structure of RA; some might include literature reviews, appendices, and acknowledgments, while others might not (Abu et al., 2021; Hampton et al., 2021; Moreno, 2021; Nguyen et al., 2021; Tavares, 2020; Valverde-berrocoso & Burgos-videla, 2020). The main point is that undergraduate students can be familiar with RA writing and publication. Related to the complete text of RA, Pho mentions twenty-one moves and forty-one steps in AIMRD – abstract, introduction, method, result, and discussion-conclusion entirety. Each section of RA involves move 1 to move 7. Further explanation of Pho's moves can be seen in Table 1.

**Table 1.** Moves of abstract section (adopted from Pho, 2013).

Moves	Description
1: Situating the research	Setting the scene (topic generalization)
2: Presenting the research	Stating the purpose, research questions, and/or hypotheses of the study
3: Describing the methodology	Describing the materials, subjects, variables, procedures, etc
4: Summarising the findings	Reporting the main findings

Moves	Description
5: Discussing the research	Interpreting the results and giving implication/application

The five moves in the abstract are situating the research, presenting the research, describing the method, summarizing findings, and discussing the research. Situating the research can be described as setting the scene for the research or topic generalization (Dawadi & Giri, 2021; Gandolfi et al., 2021; Mollard, 2020; Tocalo, 2021; Wijnia, 2023). After setting the scene, they state the purpose of the study and research questions and/or hypotheses as presenting the research. Then, describe the methodology by describing the materials, subjects, variables, procedures, etc. Next, summarizing the findings functions as reporting the main findings of the study. The last move—discussing the research is made by interpreting the results/findings and giving recommendations and implications of the study (Pho, 2013). The five moves in the abstract have been proven, especially in applied linguistics and educational technology. Table 2 shows moves and steps of the introduction section.

**Table 2.** Moves and steps of the introduction section (adopted from Pho, 2013).

Moves	Steps	Description
1: Establishing a territory	1: Summarizing existing studies	Reporting findings from previous studies, presenting background information, reviewing existing theories and frameworks, presenting general knowledge, indicating the importance of the field
	2: Drawing inferences from previous studies	Discussing and interpreting previous research
	3: Raising questions/generating preliminary hypotheses	Generating questions and tentative hypotheses out of previous studies
	4: Referring to the context of the study	Presenting the context or background information of the study
	5: Foreshadowing aim of the study	Mentioning what the study is going to be about
	6: Outlining the structure of the section	Indicating the outline of the section
2: Establishing a niche	1: Indicating a gap	Indicating gaps in previous studies
	2: Explaining the reason for the gap	Explaining why there is a gap
	3: Presenting positive justification	Explaining why the gap has to be filled, or the expansion of previous studies is necessary
3: Presenting the study	1: Announcing the research descriptively	Announcing the purpose or content of the study
	2: Presenting research questions or hypotheses	Formally (and explicitly) presenting the research questions or hypotheses.
	3: Defining terms	Defining key terms involved in the study
	4: Summarizing methods	Briefing the method of the study
	5: Announcing principal outcomes	Announcing significant findings of the study
	6: Stating the value of the research	Stating the significance of the study
	7: Outlining the structure of the paper	Giving an overview of the paper structure

Each move of Pho's model is divided into step(s) of its identifiable move. Pho considers Swales' (2004) move as a preliminary framework for her research. Additionally, she argues that Swales' move has a concise Introduction since the corpus mainly comprises science research articles. Therefore, she breaks down each move into steps. In conclusion, Section I has three moves as Swales—establishing a territory, establishing a niche, and presenting the present work in which each move has particular steps (Alharbi, 2021; Khalid, 2023; Mirahayuni & Garnida, 2019; Rahmawati et al., 2020; Sari et al., 2022). The steps are formulated so that other corpora besides science can use the moves. Each step of every move has its specific characteristic. Table 3 shows moves and steps of method section.

**Table 3.** Moves and steps of method section (adopted from Pho, 2013).

Moves	Steps	Description
1: Describing data and procedure of data collection	1: Describing the sample	Describing the participants (school or class) or the data of the study
	2: Describing research instrument	Describing the questionnaires, interviews, or tests used in the study
	3: Recounting steps in collecting data	Describing the actual steps in data collection
	4: Justifying the data collection procedure	Explaining why the subjects or instruments were selected in precise steps had to be tailed
2: Describing the data analysis procedure	1: Recounting data analysis procedure	Describing how the data were dealt with after being collected; describing the variable.
	2: Justifying the data analysis procedure	Explaining why certain analysis utensils were recycled

Pho asserts that Describing data and the data collection procedure is usually explored before Describing the data analysis procedure. She has proven that the first move was found in all disciplines (applied linguistics and educational technology). However, both steps in the latest move have different consequences since step 2 is done more frequently by applied linguistics authors than educational technology. However, both do less of exploring why exact analysis methods were used than those of management articles. The evidence makes the move a compulsory characteristic in applied linguistics and educational technology research articles.

In contrast, the other step of the method was proven insignificant through a chi-square test. As a final point, step 1 of Describing data and data collection procedure is essential, while step 2 is optional. Justifying data analysis procedure is preferred more by applied linguistics writers than educational technology ones. However, researchers in the management discipline might have more background in various qualitative and quantitative methods, which makes it easy to apply the latest methods in statistics. Table 4 shows moves and steps of the result section.

**Table 4.** Moves and steps of the result section (adopted from Pho, 2013).

Moves	Steps	Description
1: Preparing the presentation of the result section	1: (Re)stating data collection and data analysis procedure	Describing data collection and/or analysis tools, variables, steps in collecting and/or analyzing the data
	2: Restating research questions or hypotheses	Restating research questions or hypotheses
	3: Giving background Knowledge	Giving some background knowledge (context of the study,

Moves	Steps	Description
		existing literature)
	4: Indicating the structure of the section	Indicating how the section is going to be presented
2: Reporting specific/ individual results	Reporting specific results (e.g., results about a table or figure)	Restating research questions, aims of the study, etc.
3: Commenting on specific results	1: Interpreting results	Discussing the results
	2: Comparing results with literature	Comparing the results with previous findings or existing literature
	3: Accounting for results	Explaining the results
	4: Evaluating results	Evaluating individual results
4: Summarizing results	1: Interpreting/ discussing Results	Giving general discussion or interpretation of the results
	2: Comparing results with Literature	Comparing the findings with previous findings or existing literature
	3: Accounting for results	Explaining the results

Pho (2013) separates it into a Discussion for the Result section based on 35 articles in applied linguistics and educational technology. The moves included in the Result section are preparing the presentation of results, reporting results, commenting on results, and summarizing results. Reporting results is meant to report specific results concerning a Table or Figure. It is the only obligatory move in Applied Linguistics and Educational Technology (Pho, 2013). Every move has its step with different amounts among others. Preparing the presentation of results and commenting on results have four different steps while reporting and summarizing results have a different single step. Among the four moves, the last move is rarely applied (35.0% in applied linguistics and 11.0% in educational technology); it is an optional step while reporting results is essential. Table 5 shows moves and steps of discussion-conclusion section.

**Table 5.** Moves and steps of discussion-conclusion section (adopted from Pho, 2013).

Moves	Steps	Description
1: Preparing the presentation of the discussion section	1: (Re)stating data collection and data analysis procedure	Describing data collection and analysis tools, variables, steps in collecting and/or analyzing the data
	2: Restating research questions or hypotheses	Restating research questions or hypotheses
	3: Giving background Knowledge	Giving some background knowledge (context of the study, existing literature)
	4: Indicating the structure of the section	Indicating how the section is going to be presented
2: Summarizing the study		Restating research questions, aims of the study, etc.
3: Highlighting overall research outcome		Highlighting exciting findings from the study
4: Discussing the findings	1: Interpreting/ discussing Results	Giving general discussion or interpretation of the results
	2: Comparing results with Literature	Comparing the findings with previous findings or existing literature
	3: Accounting for results	Explaining the results
5: Concluding the study/ stating research conclusions		Concluding the findings
6: Evaluating the study	1: Indicating limitations	Stating limitations about the findings,

		methodology, or the claims made
	2: Indicating significance	Indicating the importance of the study
7: Deductions from the research	1: Making suggestions/ drawing implications	Drawing implications or applications of the study
	2: Recommending further Research	Pointing out areas that need further research

As a final point, Discussion-conclusion includes preparing the discussion presentation, highlighting the whole research result, discussing the findings, drawing conclusions, evaluating the research, and deducting from the research. Among the moves, most Discussion-conclusion section starts with move one or move three and finish with move 7. There are three essential moves in Discussion—Highlighting the overall research outcome, Discussing the study's findings, and Deductions from the research. Besides those essential moves, there are also four other moves involved in Discussion-conclusion—Preparing for the presentation, Summarizing the study, Drawing/stating research conclusions, and Evaluating the study. The last move—Deduction from the research, is a preferred closing move in the Discussion-conclusion section of applied linguistics and educational technology. In conclusion, the closing move is preferential in Applied Linguistics, Sociology, and Agricultural Economics. Applied Linguistics is one of the disciplines analyzed in this study besides Applied Literature and English Education. Above and beyond confirmation of using Pho's moves and steps, the implementation of two other disciplines will also be proven. The demonstrated moves and steps might also be implemented in different supplementary disciplines with diverse uses.

## RESEARCH METHOD

The data for the current study were gathered using a qualitative research methodology that involved observation and documentation. The observation was completed using the move-analysis Table (see Table 6), and the documentation was generated by compiling articles written by undergraduate students into a soft file. Researchers themselves played the role of the critical instrument in the documentation process, the human investigator. Selecting an undergraduate student's English RA was the first step in the research process. Secondly, the researchers were the core instrument in collecting and analyzing data that selected the data as corpus of the study. The study assortment was deliberated to signify involvement in the research results, specifically ELT. In the last method, the data represented moves and steps in undergraduate students' RAs that signify scientific writing (Asad et al., 2021; Bailey & Almusharraf, 2021; Garth, 2022; Lestariningsih et al., 2016; Perry, 2023; Safira et al., 2021).

The study was considered a document analysis since it examined research papers. The articles were written in English by EFL students, definitely undergraduate students. They were examined on specific characteristics of a research article. The moves in the articles written by undergraduate students may consist of one or more steps on each move, as mentioned in Pho's (2013) model. The move analysis was emphasized in the unabridged sections of the articles. By understanding the rhetorical organization of research articles, consequences on higher education writing skills can be accomplished (Bearman et al., 2023; Davydenko et al., 2021; Nückles et al., 2020; Shannon Tan, 2023; Wu & Schunn, 2020).

This presented study used a Table to find rhetorical moves exposed in every section of RA for educational impression. The Table was filled with sentences that described

individual functions of move and step. It dealt with narrative description as well as discourse analysis. The discourse analysis results can be a worthy model for constructing scientific writing. The study investigated the moves and steps in written statements of EFL learners. The data were scientific articles by English department students. The data source was unpublished English RAs written by undergraduate students. The articles were written based on guidelines in scientific writing. It embraced RA sections of English Department students of higher level education in Jombang. It comprised twenty-two soft files of RA on English Education, Applied Linguistics, and Applied Literature. Those RAs implied time triangulation since it consisted of three different class periods. There were nine English Education articles, seven on Applied Linguistics and six on Applied Literature.

There were three steps to finding rhetorical moves exposed in every section of RA using Pho's model—data condensation, data display, and drawing and verifying conclusions. In data condensation, the researchers were only concerned with data regarding moves and steps in undergraduate students' RAs. Next, the researchers provided the result as a chart by applying Pho's theory (2013). In the last step, the researchers summarized the findings of this study related to the statement of the problem formulated by signifying the moves and steps as mentioned in Pho's model. Considering data validity does not guarantee credible and valid discoveries that investigator triangulation is necessary, investigator triangulation was then applied in this current study.

## **RESULTS AND DISCUSSION**

### ***Results***

This study describes the moves and steps of Pho (2013) implemented within AIMRD of undergraduate students' RAs. The complete texts of undergraduate students' RAs were examined on each section of RA based on the order of AIMRD. The articles collected were classified into English Education, Applied Linguistics, and Applied Literature.

### **Pho's Moves and Steps Implemented in Undergraduate Students' Research Article Abstracts (RAAs)**

The result of this study originated abstract as the first section of RA among five parts is the essential section of RA as readers come upon published RA firstly through the abstract. The implemented moves and steps analyzed include the complete text of RA written by undergraduate students. The complete texts of undergraduate students' RAs were examined on each section of RA based on the order of AIMRD (see Figure 2). There were M1, M2, M3, and M4, to which every RA of English Education and Applied Literature pertained. On the other hand, while not all RAs of Applied Linguistics employed M1 and M5, most RAs of English Education and Applied Literature did. Twenty-two RAs, or eleven of them, failed to apply M1, while seven RAs failed to apply M5. In other words, every Pho's move of the abstract was used on RA of English Education and Applied Literature. In conclusion, the five moves in the abstract are obligation moves. It proved undergraduate students' awareness of applying Pho's move. Their awareness verified undergraduate students' promptness in entering the discourse community of English Education.



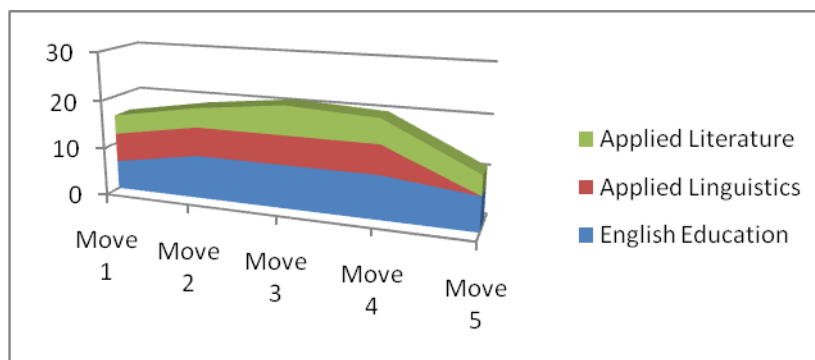


Figure 2. Move Expression of undergraduate students' RAAs.

### Pho's Moves and Steps Implemented in Undergraduate Students' Research Article Introductions (RAIs)

Among the three moves, establishing a territory (M1) and presenting the study (M3) were the most functional moves in RA of English Education. Both utmost moves were specified in the first step—summarizing existing studies and announcing the research descriptively. Along with the six phases of M1, Step 1 was utilized nearly universally by all students, followed by Step 2 by five, Step 4 by six, and Step 5 by three out of nine students. Further explanation about those RAIs is displayed in Figure 3.

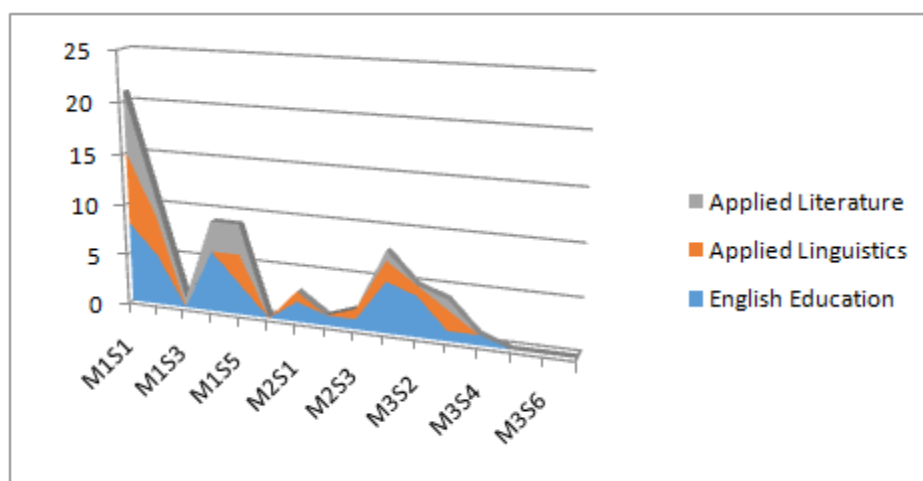


Figure 3. Move expression of undergraduate students' RAIs.

The introduction section places the first section of the IMRAD structure. Pho (2013) mentions three moves with sixteen steps in RAI writing. The finding of this research exposed that RAIs of English Education engaged three moves with eleven steps, and RAIs of Applied Linguistics engaged three moves with eight steps. In comparison, RAIs of Applied Literature engaged in two moves with seven steps. Among Pho's three moves, M1 and M3 were the uppermost occurrences moves, while amid sixteen steps, there were nine topmost occurrences steps—M1S1, M1S2, M1S4, M1S5, M2S1, M2S3, M3S1, M3S2, M3S3. Additional justification for the uppermost occurrences steps are explained in the preceding paragraphs.

### Pho's Moves and Steps Implemented in Undergraduate Students' Research Article Methods (RAMs)

There were two moves described by Pho (2013) in composing RAM agreed upon by the discourse community—M1 with four steps and M2 with two steps mentioned by Pho (2013). Undergraduate students used Pho's (2013) techniques and strategies for creating

RAMs for English Education, Applied Linguistics, and Applied Literature (see Figure 4). Those findings contradict an investigation on education research, which used three moves—describing the research methodology, steps for gathering data, and steps for analyzing that data. Describing data collection procedures involves six steps, while describing data analysis procedures includes three steps. Related to the status, each move and step has different status moves—describing the research design is optional, describing data collection procedures is obligatory while describing data analysis procedures is conventional (Bdair, 2021; Cameron-Standerford et al., 2020; Xu et al., 2020; Ye, 2019). About the status of each step, describing the sample is conventional, while the others are optional. It can be concluded that two moves and a single step are employed the most in educational research—describing processes for gathering data and analyzing data and the sample.

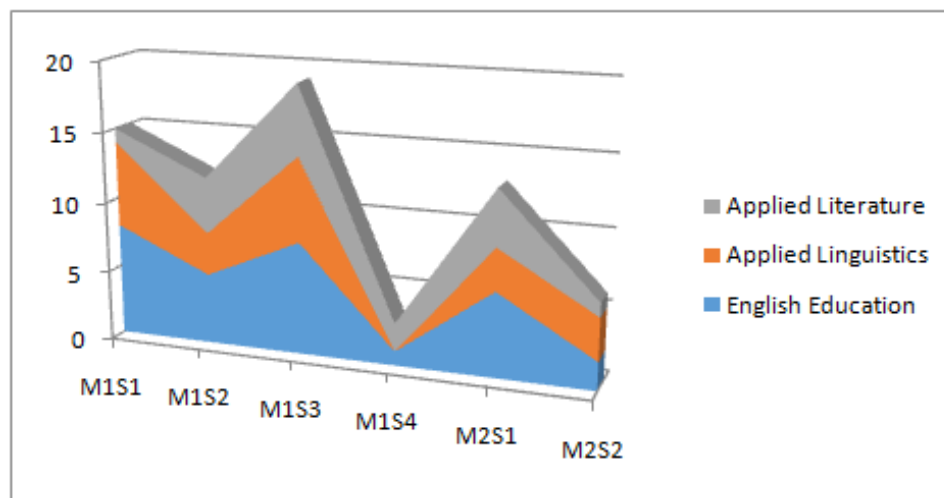


Figure 4. Move expression of undergraduate students' RAMs.

### Pho's Moves and Steps Implemented in Undergraduate Students' Research Article Results (RARs)

Four moves include twelve steps declared by Pho (2013) on research article results (RAR). Every move of RAR consists of four steps except the second move, which does not have a step (see Figure 5). Undergraduate students who wrote RARs on English Education, Applied Linguistics, and Applied Literature used the entirety of Pho's (2013) four steps of the result section but not for the steps. Among eleven of the twelve steps employed, there were six most engaged steps found on undergraduate students' RARs—(re)stating data collection and data analysis process, restating research topics, providing context, identifying section structure, restating aims of the study, accounting for results.

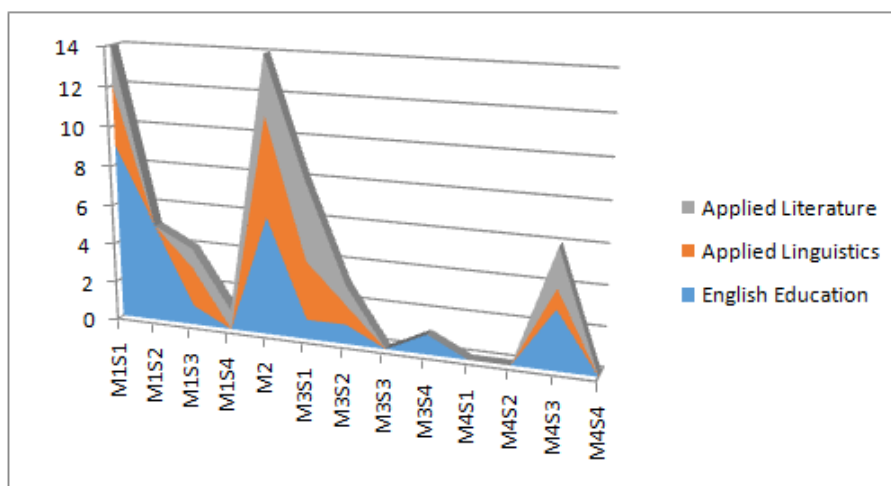


Figure 5. Move expression of undergraduate students' RARs.

(Re)stating data collection and data analysis procedure as the earliest occurrence step of Pho's implemented by undergraduate students was included in the research method. It is similar to Thompson's (2014) finding that justifications of experimental methods and interpretations are the most common move. The finding verified Pho's move and step in writing RAR confirmed that it is necessary (re) state data collection and data analysis procedure in composing RAR. Regarding method and methodological justification, movement from raw data to valid data is necessary since the validity of experimental data depends on methodology. She asserts further that justifications of the method are an essential move for convincing the reader.

### Pho's Moves and Steps Implemented in Undergraduate Students' Research Article Discussion-conclusions (RADs)

Discussion-conclusion is the last section of RA, which is established after exposing the research findings. It discusses the research findings by comparing them with previous studies or existing literature, either supporting or conflicting the research result. Thus, it is a fundamental section since it presents contributions related to research results and existing literature on the social order. Among thirteen of fourteen steps employed (see Figure 6), there were seven steps engaged found on wholly undergraduate students' RADs—highlighting interesting findings, analyzing and debating the findings, contrasting the findings with the literature, accounting for the findings, identifying limitations about the findings, the methodology, or the claims made, and highlighting the significance or value of the study.

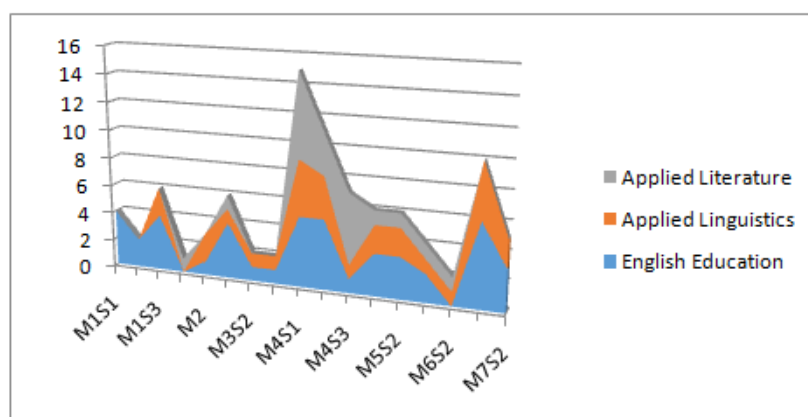
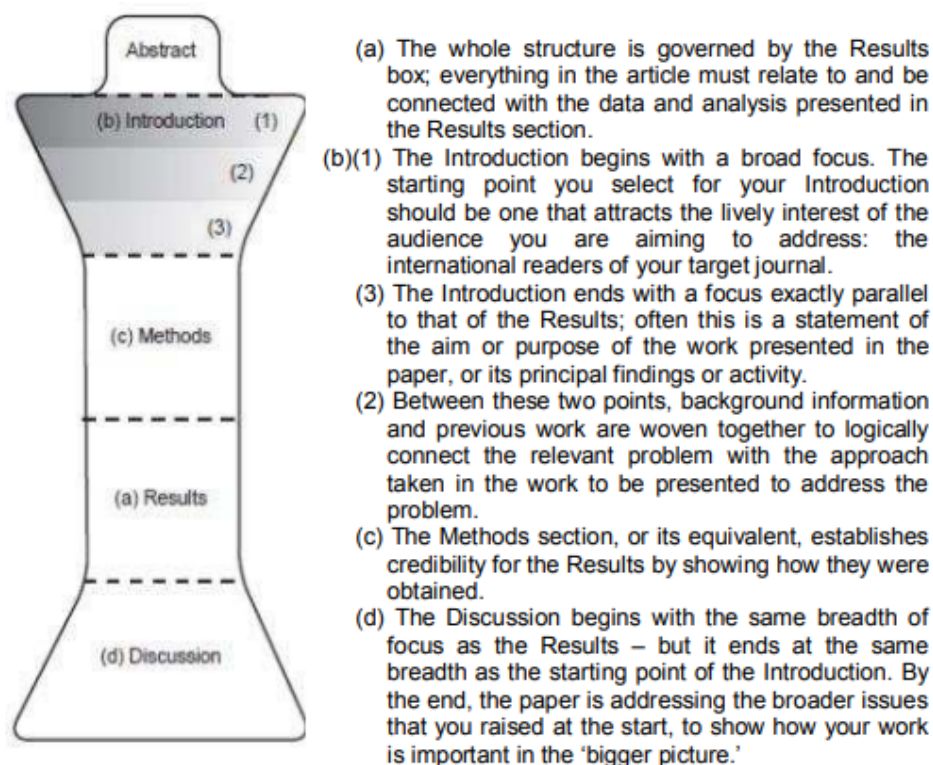


Figure 6. Move Expression of Undergraduate Students' RADs

## Discussion

Standard sections are known in English RAs as IMRD – Introduction, Method, Result, Discussion, while this present study refers to AIMRD – Abstract, Introduction, Method, Result, Discussion. The keyword of complete sections in English RA is AIMRD. The keyword is also called AIMRaD, as seen in Figure 7. Ščigulinská (2020) asserts that IMRaD and AIMRaD have established themselves as frequently used formats for academic papers in linguistics and language as well as those already mentioned. The abstract is frequently thrown off after everything else has been finished (Hammond, 2023), just like the title. Among the three disciplines involved in this study, most English Education and Applied Literature RAA elaborated the entire five moves of Pho (2013), while six among seven Applied Linguistics RAAs expanded four of five moves. Amid four moves dominated, M5 was unexploited – Discussing the research. Applied Linguistics abstracts omitted background information about the topic (M1). They avoided an informative discussion of the research results (M5), while Applied Linguistics abstracts in this present study missed the discussion of the research. The introduction position in RAA was the least frequent move – three of the five as the principal move in the Management and Marketing sub-disciplines. There were three conventional moves in abstract Linguistics and four in Applied Linguistics. The vacant moves were the first and the last move. The first move was optional for both fields, while the last was optional in Linguistics but was conventional in Applied Linguistics. Although the three disciplines utilized the same moves, each has a different description.



**Figure 7.** The AIMRaD: A shape of a generic scientific article (adopted from Cargill & O'Connor, 2009).

The findings indicated that undergraduate students utilized all five moves of the Abstract section recommended by Pho (2013) in writing English Education RAA. Pho (2013) asserts that M1 describes the field/topic of research by providing background information for the current study (topic generalization). However, undergraduate

students leaned towards showing the topic and presenting the problem, particularly on CAR. Instead of topic generalization, none of the undergraduate students described setting the scene for their current research. However, they then designated the topic and the problem found based on their background knowledge about the field of research. Referring to Move 1 of Abstract in Applied Linguistics RAs, an extra move—'situating the research placed earliest among other moves. The earliest move was confirmed in composing the RAA of Applied Linguistics. However, undergraduate students in Applied Literature RAA also implemented Santos' additional move. Using 'situating the research,' undergraduate students initiated the central issue of RA by explaining the topic followed by phenomena or on the contrary.

The majority of undergraduate students used research when submitting RAAs for English Education but not for Applied Linguistics, according to Pho's (2013) final statement. The move description employed in discussing the research was interpreting the result; none employed giving implication/application. Undergraduate students' RAAs of English Education employed giving implication/application that effected and was found on their research but has not implied conclusion that can be helpful daily. The "benefits" step is the final move that serves to demonstrate the desired outcome and can be helpful in daily life, especially for individuals who are paying attention to the research findings. It means the "key benefit for the readers" is one of the most pertinent details that the abstract offers and it is stated there (Ščigulinská, 2020). Considering the Abstract section with a complete five moves presented a more comprehensive overview of the content of the study, the five moves of Pho (2013) are confirmed in RAA writing.

Among the six steps on M1, there were four principal steps utilized by undergraduate students' RAIs—summarizing existing studies, drawing inferences from previous studies, referring to the study's context, and foreshadowing the aim of the study. Wu (2011) mentions four reasons for conducting research—the problem, importance, research question/hypotheses, and study objectives. By referring to Wu's statement, summarizing existing studies and drawing inferences from previous studies can be used to support the importance of the study while foreshadowing that the aim of the study is equal to the study's objectives. The corresponding Pho's steps with Wu's four reasons proved that Pho's steps on M1 are confirmed in writing RAIs. This present study also confirms that in addressing M1, there are four main steps. Those steps are categorized into the first move of RAIs writing—establishing a territory. By the first move, undergraduate students attempted to present background information related to the topic and refer to the context of the article, which is intended to attract readers' interest in finding more information discussed in the article. By attracting readers' curiosity, convincing the reader to find more information and read further can be then concluded.

The subsequent move of Pho (2013) is establishing a niche with three steps. None of the three processes were used by undergraduate students when they wrote RAIs of Applied Literature. However, both RAIs of English Education and Applied Linguistics used two steps to identify a gap and justify why it needed to be filled. Indicating a gap was the highest step engaged by undergraduate students; the result of this study is in line with Rahman et al. (2017). They claimed that the uppermost step is employed in establishing a research niche. Establishing a niche draws the existing weak point and gaps or afford reasons following the credentials of the gap (Rahman et al., 2017). Afford reasons following credentials of the gap refers to step description of explaining why the gap has to be filled. The finding of this present research is in line with Rahman et al.

(2017) and verified Pho's (2013) steps in establishing a research niche. Utilizing three processes, the success of developing a specialty is achieved. However, Pho's (2013) steps in establishing a niche are confirmed.

Pho's (2013) last move in the introduction section—presenting the study involves actions related to establishing a territory and establishing a niche (Rochma et al., 2020) by completing the research objective, structure, features, and main finding. Among four of the seven steps employed, there were three most engaged steps found on undergraduate students' RAIs—announcing the research descriptively, presenting research questions or hypotheses, and defining terms. Those engaged steps are in contrast to findings in the English Language Teaching research proposal introduction, which mention Step 1 as the only most employed step and considers Step 1 as the obligatory step (Rahman et al., 2017), while this present study found announcing the research descriptively and defining terms as the employed step on RAIs of English Education, Applied Literature, and Applied Linguistics. On the other hand, outlining purpose was the most employed step in articles published at the University of Santo Tomas. In this present study, announcing the research descriptively is the same as outlining the purpose. This means a single step is not sufficient in presenting the study. The insufficient step leads to the way of writing introductions, which incorporates suggestion, enjoyment, and good intentions while avoiding excessive repetition (Kurniawan et al., 2019).

By referring to the discussion in the former paragraphs, it is necessary to portray an additional viewpoint of the finding. The findings of this study tended to follow the move and steps of Pho (2013), whose structure stubbornly presents customary patterns. The presented move structure inferred that undergraduate students in composing RAIs of English Education, Applied Linguistics, and Applied Literature have a propensity to be linearly shaped that it might be used in composing RAIs of other disciplines. The structural pattern of RA is apprehended with the frequent format approved by discourse communities. It verifies that they organized the pattern of writing RA by following the discourse community convention represented by Pho.

On the other hand, three steps were skipped by most undergraduate students in writing RAIs—raising questions/generating preliminary hypotheses, explaining the reason for the gap, and summarizing the method. There were also four other skipped moves—outlining the structure of the section, announcing principal outcomes, stating the value of the research, and outlining the paper's structure. Undergraduate students were provided guidelines besides an advisor in composing a thesis. The guideline supplies written instruction in writing the thesis and research article while the advisor equips oral direction and instruction (Field et al., 2023; Gosselin & Golick, 2020; Gredler & Harland, 2022; Puspitasari et al., 2020; Putra et al., 2021; Snow & Coker, 2020). In completing their information thesis and research article writing, they tend to read theses of other students and search for previous studies virtually. The skipped moves in writing RAI substantiated the incompleteness of instruction of the guideline that undergraduate students missed the steps. However, they had other theses as examples of composing scientific writing. Consequently, the unpublished theses tended to show mistakes since no guidelines have been provided.

Describing the sample is one of the steps among the other five in describing data collection procedures. In educational research, undergraduate students usually report experimental research, classroom action research (CAR), and non-experimental research. Undergraduates referred to the population, sample, and subject of the

research in CAR as the research sample in both experimental and non-experimental studies. The sample involved in the research is part of the data to be collected and analyzed. It verifies that educational research employed a multivariate analysis method and a qualitative approach. Techniques for multivariate data analysis track and examine numerous statistical variables (Mwange et al., 2023). The qualitative approach must be present to distinguish the growing number of qualitative research articles. The proportion of published articles rose from 2.0% to 5.0% in the 1980s and 1990s and from 5.0% to 16.5% in the 2000s. It can be concluded that describing the sample and data collection procedures of Zhang & Wannaruk (2016) is the same as Pho's (2013) M1, while describing data collection procedures is equal to M2 of Pho's. There are four steps incorporated with M1 of Pho's—describing the sample, research instrument, steps in collecting data, and justifying the data collection procedure. Pho's (2013) four steps are the same as the steps of Zhang & Wannaruk's (2016), but Pho's are on the whole employed steps while Zhang & Wannaruk's is predominantly optional steps, only a single step was conventional. Besides the four steps, two other steps are integrated in Pho's (2013) M2—recounting the data analysis procedure and justifying the data analysis procedure. The two steps are, on the whole, employed steps of Pho's while Zhang & Wannaruk's are optional steps entirely. It demonstrates that Pho's moves and steps were used to create RAM, as acknowledged by the discourse community.

Lubis (2019) focused on a move with four steps in analyzing the argumentation structure of the 'finding and discussion' RA written by Indonesian undergraduate students. RA finding is the same as the RA result, and the move used is commenting on a specific result, which is Pho's third move in writing RAR. Commenting on specific result moves was chosen as the investigation was focused on argumentation structure. The four steps used by Lubis (2019) are interpreting the result, comparing results with literature, accounting for results, and evaluating results. Among the six most engaged steps on undergraduate students' RARs, accounting for results is similar to one of the steps used by Lubis (2019). The finding demonstrated that Pho's step is entrenched in that accounting for the result is necessarily included in composing RAR.

This present study also reveals two steps missed by most undergraduate students in writing—indicating the structure of the section and evaluating the result. Undergraduate students also missed another step in writing RAR on the three groups of articles—accounting for results. Consequently, there were three steps missed by undergraduate students. Indicating the structure of the section, evaluating results, and accounting for result steps were not settled on the institution's guidelines. Undergraduate students did not realize the necessity of the steps. The three steps were not frequently found in other theses they had read that support the unnecessary steps in writing RAR. Specifically on the accounting for result step, undergraduate students implemented it in summarizing results as the last step of Pho in writing RAR. In other words, undergraduates avoid overlapping descriptions discussed twice within the RAR section.

This present study's finding contradicts an investigation on Applied Linguistics RADs in International and Thai Journals, which employed two most occurrence steps—reporting findings and making remarks about findings. Among seven moves, each move had a different occurrence. Commenting on the results was a necessary action for the International journal. However, it was conventional for Thai journal reporting results was conventional for both International and Thai journals, while five other moves were optional. The five moves were optional since the moves were less

frequently employed. Indonesian English academics also employed only four moves among eight. The rest four other moves were absent (Asari & Kurnia, 2018). About the steps engaged, Pho's moves were employed more in writing RAD, whether in Applied Linguistics, Applied Literature, or English Education. Thus, this present study proposes M3S1, M4S1, M4S2, M4S3, M5S1, M5S2, and M6S1, which are relevant to Pho's (2013) moves and steps.

The proposed moves and steps of Pho (2013) reveals that undergraduate students showed their existence in discussing the research findings and beginning supplementary explanation on the findings to raise the trustworthiness of research results, particularly in touching on related literature or relevant studies. Thus, it is necessary to change the notions of English RA, as stated by Pho (2013); discussing the research results from the view of existing literature or related studies is necessarily exposed in composing RAD. By contrasting the research findings with pertinent theory or earlier findings from related studies, the discussion of current literature or related studies is carried out. Comparing findings with related theories or relevant studies is essential for presenting a significant contribution of the research that has been conducted to the available knowledge. As a result, when comparing research findings to the literature, M4S2 of Pho (2013) must be disclosed by providing a thorough justification of the findings and connecting them to pertinent earlier research. By employing M4S2, the writer could review the existing information about the subject of the study discussed. In addition, M4S2 supports the availability of contribution given by the study by providing information from related studies that persuades readers to find more information discussed in the study.

The previous paragraphs infer that three steps were skipped by most undergraduate students – (re)stating data collection and technique for data analysis, restating the study question or hypothesis, and indicating the structure of the section. The two steps – (re)stating data collection and data analysis procedure and restating the research question or hypothesis, had been discussed in the RAR section that undergraduate students circumvent overlapping explanations within the Result and Discussion-conclusion sections. Undergraduate students must restate data collection and analysis procedures differently since much information can be explored in writing RAD. Additional information that can be explored is associated with related literature or relevant studies.

Overall, undergraduate students' moves and steps of AIMRaD on RAs were necessary to be equipped. More than providing guidelines in writing, RA is required to equip students with scientific writing. It has been established that RAs for undergraduate students have yet to finish with actions and steps accepted by the discourse community. Considering moves and steps recognized by the discourse community, the Discussion-conclusion section should be separated. Based on the description of Pho's moves and steps, the Result and Discussion have the same description in move 1, move 3, and move 4. The result and discussion can be described in the same chapter, while the Conclusion is in a separate chapter. Each result is presented, followed immediately by the pertinent discussion, and the Results and Discussion are integrated into a single section. Due to this alteration, a new part at the end that is frequently titled Conclusions is required to tie everything together. Referring to Pho's moves and steps, there were sixteen moves among twenty-one and twenty-two steps among fifty employed by every undergraduate student (Osborn et al., 2022). Four of the five jobless moves – out of the five – were missed by every student, while some



used one move. The unemployed moves and steps arose because undergraduate students lacked knowledge of writing a scientific article. Even though they were provided guidelines for producing RA, undergraduate students failed to finish or notice some processes when writing scientific articles.

## CONCLUSION

**Fundamental Finding:** The findings and discussion of this present study infer undergraduate students' descriptions in writing research articles. Undergraduate students' thought patterns and tendencies refer to the employment of moves and steps that are uppermost occurred. Only one of the five moves in the abstract section— Applied Linguistics RAA—missed M5, and all five moves in the abstract section are obligatory. The three moves in the introduction section must be completed, and only Applied Literature RAI failed M2. Due to their usage in English Education, Applied Linguistics, and Applied Literature RAM, both moves must be used in the method section. English Education, Applied Linguistics, and Applied Literature RAR all use the four moves in the result section, making them mandatory moves. Since English Education RAD used the entire move, Applied Linguistics RAD only missed M3, and Applied Literature RAD missed M2 and M7, all seven moves in the final research article section are required. **Implication:** In conclusion, sections of research article writing developed by undergraduate students in the discipline of English Teaching, Applied Linguistics, and Applied Literature is recommended to be a consideration in revising the institutional guide for composing research article as well as reflection in composing research article for other disciplines. **Limitation:** Related to linguistics realization, undergraduate students place and develop moves and steps efficiently. Even though there are several moves and steps skipped, they do not devastate the linearity and logic of the methodical research article. Undergraduate students' cultural characteristics, prerequisites, and preferences affect the helpful and brief practice of writing research articles, which results in the absence of moves and steps. **Future Research:** The advice aims to promote research article writing by suggesting actions and procedures that have a good chance of being approved by the discourse community. The power of being approved by the discourse community in authority is meant to encourage writers to publish their research articles in journals, whether certified or uncertified, as well as to compose research articles. Lecturers should promote and direct students in scientific writing since they can not compose scientific papers only by following guidelines.

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